

# A NEW RECORDED GENUS AND THREE NEW SPECIES OF GRASSHOPPERS FROM CHINA (ORTHOPTERA, CATANTOPIDAE)

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**Abstract** The genus *Genimenoides* Henry 1934 is reviewed and a key to known species is given. A new species of *Genimenoides* (*G. vittatum* sp. nov.) and two new species of *Genimen* (*G. zhengi* sp. nov. and *G. bannanum* sp. nov.) are described. A key to known Chinese species of *Genimen* is given. All type specimens are deposited in the College of Life Sciences and Chemistry, Dali University, Yunnan Province, China.

**Key words** Orthoptera, Catantopidae, *Genimenoides*, *Genimen*, new recorded genus, new species, China.

The genus *Genimenoides* Henry 1934 currently contains two species from Sri Lanka: *G. subapterum* (Uvarov, 1927) (type species) and *G. olabratum* Henry, 1934. The genus is closely related to *Genimen* Bolívar, 1918 but differs from the latter in the presence of the scale-like tegmen. *Genimen* includes seven species at present. Both genera occur only in the Oriental region. Three new species from Yunnan, *Genimenoides vittatum* sp. nov., *Genimen bannanum* sp. nov. and *Genimen zhengi* sp. nov. are described in this paper. The genus *Genimenoides* is recorded in China for the first time. Type specimens are deposited in the College of Life Sciences and Chemistry, Dali University, Yunnan, China.

## *Genimenoides* Henry 1934

*Genimenoides* Henry 1934: 194–195, pl. 14. Otte, D. 1995: 304. Yin, Shi & Yin, 1996: 303.

Type species: *Genimenoides subapterum* (Uvarov, 1927) (= *Genimen subapterum* Uvarov, 1927).

Body small. Fastigium convex and declivitous. Frons oblique. Frontal ridge projecting and broad between antennae. Antennae filiform. Eyes large, prominent and nearly round, narrowly separated dorsally. Pronotum cylindrical, foveolate and rugose, anterior margin weakly rounded, posterior margin slightly concave, median carina present, only interrupted by last sulcus, lateral carinae absent. Prosternal tubercle short, apex conical. Tegmina scale-like, lateral. Postfemora stout or normal, with upper carinae smooth, lower genicular lobes obtusely angular. Posttibiae cylindrical without external apical spine. Tympanum small, reduced. Male 10th abdominal tergite with or without small furcule at posterior margin. Supraanal plate triangular. Cerci

conical, somewhat compressed. Ovipositor stout.

Distribution: Sri Lanka, China (Yunnan).

## Key to species of the genus *Genimenoides*

1. Body somewhat stout, tympana small, distinct, pronotum with a row of three or four spots on disc, postfemur yellowish green without Y-shaped black mark ..... 2  
Body normal, tympana reduced, surface somewhat sclerotic, margin blurry, pronotum with dirty yellow stripes on disc (Figs 1–2); postfemur yellow with Y-shaped black mark (Figs 1, 24) ..... *G. vittatum* sp. nov.
2. Tegmen reaching to middle of 1st abdominal segment, covering tympanum; pronotum with a row of four pale callous spots on disc, postfemur with knee bottle-green ..... *G. subapterum*  
Tegmen surpassing beyond posterior margin of metanotum; pronotum with a row of three white spots on disc, postfemur with knee brown ..... *G. olabratum*

*Genimenoides vittatum* sp. nov. (Figs 1–6, 24–25)

Female. Body small. Head conical, distinctly shorter than pronotum (Fig. 1); fastigium roundly protrudent, interocular distance narrow, about 0.8 times as wide as frontal ridge between antennae, and as wide as scape of antennae, frons oblique in lateral view; frontal ridge projecting and broad between antennae, gradually concave below antennae, constricted above transverse facial furrow and obsolete below it, lateral keels straight. Antennae filiform, reaching coxa of hind leg. Eyes prominent, longitudinal diameter about 1.2 times as horizontal diameter, about 1.5 times as subocular furrow. Pronotum with anterior margin feebly convex, posterior margin shallowly concave, median carina indicated by a smooth line, only interrupted by last sulcus, lateral carinae absent, prozona 3.2 times longer than metazona (Fig. 2). Prosternum as a whole bulging, prosternal spine small, conical, apex subacute. Mesosternal lobes 1.1 times wider than long,

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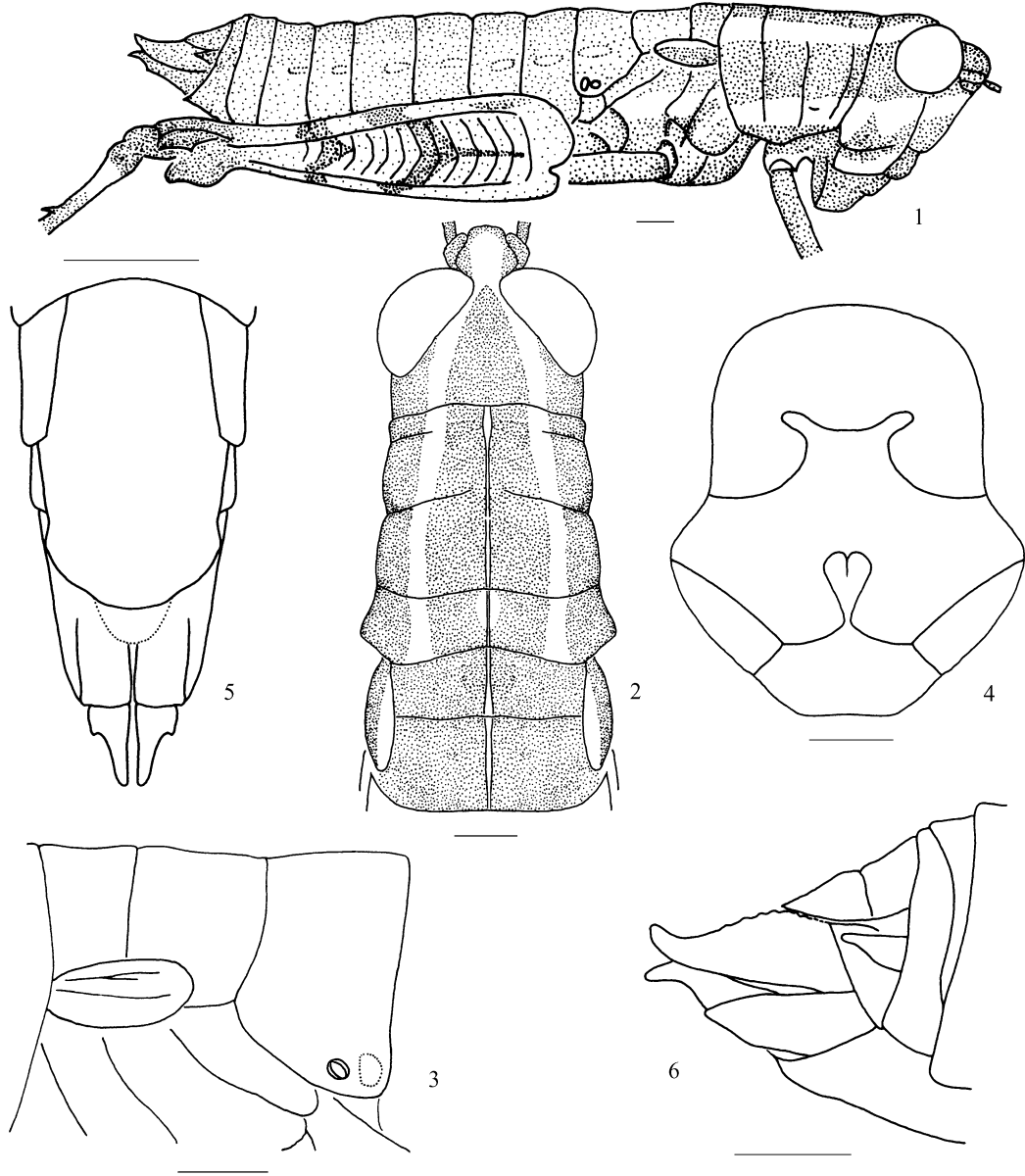
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mesosternal interspace about 0.8 times longer than minimum width; metasternal lobes nearly contiguous (Fig 4). Tegmina scale-like small, lateral reaching middle of metanotum (Fig 3). Postfemora with upper carina smooth, lower kneelobes with apex roundly angular. Posttibiae cylindrical with 8 external and 9 internal spines on dorsal side; external apical spine absent. Tympana reduced, surface somewhat

sclerotic; margin blurry, opening a little larger than stigma (Fig 3).

Female 10th abdominal tergite entire in middle. Supraanal plate rhombic with lateral areas sloping mid area with a transverse impression. Cerci short conical. Subgenital plate with posterior margin roundly projecting with a rounded flap (Fig 5). Valves of ovipositor hook-like; margins apically smooth (Fig 6).



Figs 1-6 *Genivovoides vittatum* sp. nov., female. 1 Body, lateral view. 2 Head and thorax, dorsal view. 3 Mesothorax, metathorax and 1st abdominal tergite, lateral view. 4 Mesosternum and metasternum. 5-6 Abdominal apex, ventral and lateral views. Scale bars= 1mm.

Coloration (Figs 1-2, 24-25). Body black, with a narrow median yellow stripes on disc. Frons and frontal ridge yellow with symmetrical black spots. Genae yellow with V-shaped black spots. Fastigium yellow with margins black. Postocular bands black

continued as lateral bands on disc of pronotum and abdomen. Antennae distally darker; last segment light. Eyes brown. Pronotum black; lateral lobes black; ventral part yellow; ventral margin black. Tegmina brown; anal area yellow. Postfemora

yellow, in apical half with a complete zigzag-shaped black ring, outer side with a Y-shaped black marking; upper and lower sides with a longitudinal basal and a transverse median black spots; inner side with a black spot before middle, knee black. Posttibiae dirty blue with basal part black and next to a light ring, apex infuscate. Abdominal tergites black with a median longitudinal dirty yellow stripe and a row of seven dirty yellow lateral longitudinal spots; abdominal sternites brownish yellow. Supraanal plate black. Cerci and ovipositor dirty yellow.

Male Unknown

♀. Measurements (mm). Length of body 22.3; width of body at mesepisternum: female 5.0; length of antenna 10.5; length of pronotum 3.8; length of

tegmen 2.1; length of postfemur♀ 11.0; width of postfemur 2.7.

Holotype ♀, Mengding Town, Gengma County, Yunnan Province (23°33'N, 99°04'E), 7 Aug 2004, coll MAO Ben-Yong.

**Etimology.** The new species is named after pronotum with two broad dirty yellow lateral stripes on disc.

**Diagnosis.** The species is similar to *Genimen humanum*, Rammer, 1940 in coloration, but differs from the latter in possessing scale-like tegmen and reduced tympana. The new species resembles *Genimenoides subapterum* (Uvarov, 1927) and *Genimenoides coloratum* Henry, 1934; it differs from the latter two species in characters in Table 1.

**Table 1 Comparison among *G. vittatum* sp. nov., *G. subapterum* (Uvarov, 1927) and *G. coloratum* Henry, 1934**

<i>G. subapterum</i> (Uvarov, 1927)	<i>G. coloratum</i> Henry, 1934	<i>G. vittatum</i> sp. nov.
Body stouter	Body stouter	Body normal (Figs 1, 24)
Tegmen reaching to middle of 1st abdominal tergite, covering tympanum	Tegmen surpassing beyond posterior margin of metanotum	Tegmen reaching to middle of metanotum (Figs 1-3, 24)
Tympanum small, distinct	Tympanum small, distinct	Tympanum reduced, surface somewhat sclerotic; margin blurry; tympanal opening faintly larger than stigma (Figs 3, 24)
Median stripe on back of body broad, distinct; pronotum with a row of four pale callous spots on disc; postfemora yellowish green, knee bottle green	Median stripe on back of body broad, distinct; pronotum with a row of three white spots on disc; postfemora yellowish green, knee brown	Median stripe on back of body narrow, indistinct (Fig. 24); pronotum with dirty yellow lateral stripes on disc (Figs 1-2, 24-25); postfemora yellow with Y-shaped black marking and black ring, knee black (Figs 1, 24)

## *Genimen* Bolivar, 1918

*Genimen* Bolivar, 1918: 401; Henry, 1934: 193; Wilkerson, 1957: 17, 342; Otte, 1995: 303; Zheng & Shi, 1998: 163; Yin, Shi & Yin, 1996: 303; Li, Xia *et al.*, 2006: 399.

Type-species *Genimen presinum* Bolivar, 1918

Size small. Fastigium somewhat projecting; lateral facial keels distinct; interocular distance smaller than width of scape of antennae. Pronotum with prozona above 4.0 times longer than metazona; lateral carinae absent. Prosternal tubercle short; apex conical. Apterous. Tympanum distinct or reduced.

Distribution: China (Yunnan); India; Sri Lanka; Burma.

### Key to the known Chinese species of *Genimen*

1. Pronotum and abdomen with three longitudinal yellow stripes on dorsum; postfemora with Y-shaped black marking on outer side ..... 2  
Pronotum and abdomen with three longitudinal white stripes on dorsum; postfemora without Y-shaped black marking on outer side, but with orange-red ring before knee ..... 3
2. Male 10<sup>th</sup> abdominal tergite without fircuke; supraanal plate triangular; apex obtuse ..... *G. humanum*  
Male 10<sup>th</sup> abdominal tergite with small triangular fircuke; supraanal plate long triangular; apex subacute (Fig. 9) ..... *G. bannanum* sp. nov.
3. Head as long as pronotum (Fig. 14); male supraanal plate with apical third thickened; lateral margins somewhat constricted in

middle; posterior margin roundly projecting in middle (Figs 17-18)

..... *G. zhengi* sp. nov.

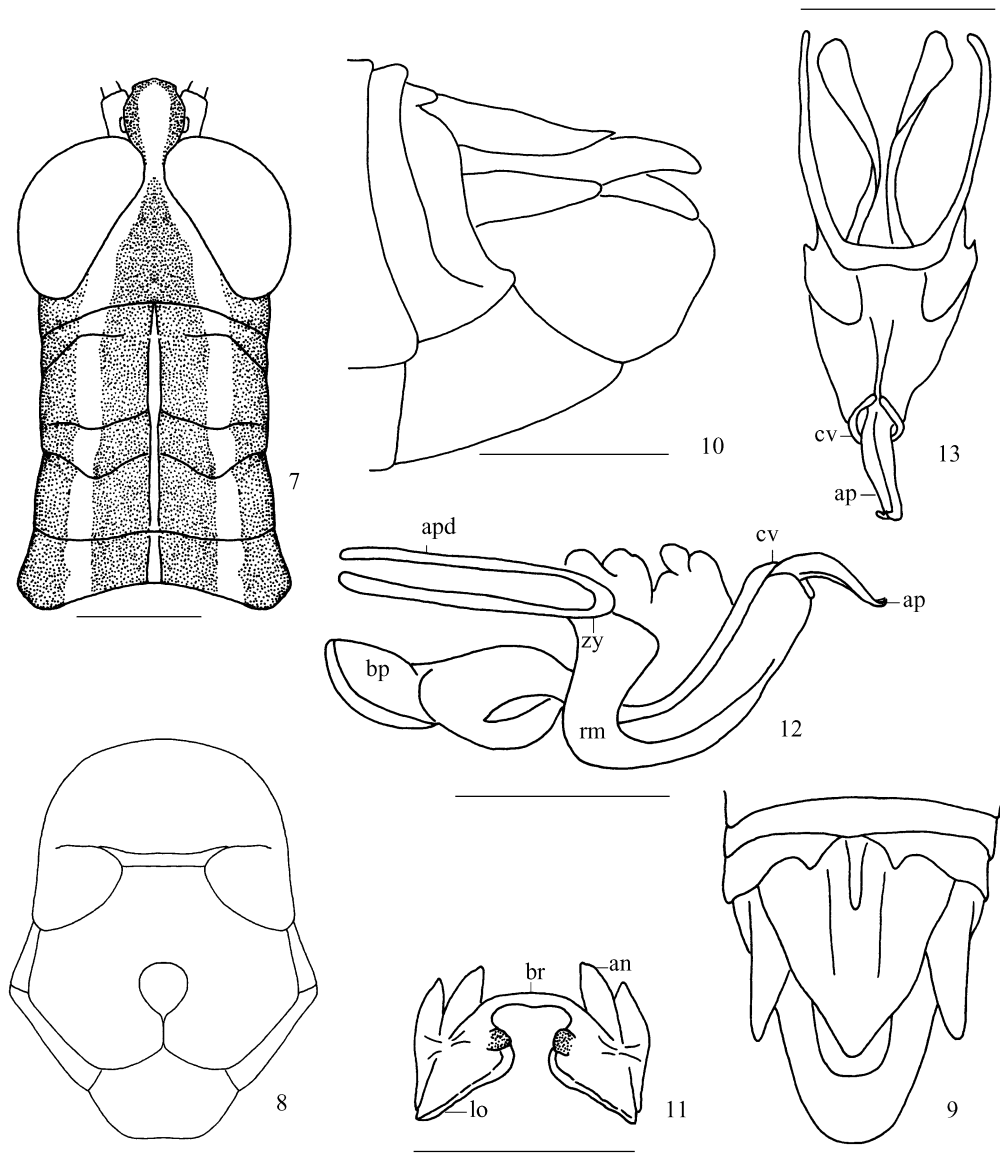
Head shorter than pronotum; male supraanal plate with apical third normal; lateral margins straight; posterior margin triangular projecting in middle ..... *G. yunnanensis*

*Genimen bannanum* sp. nov. (Figs 7-13, 26-27)

Male. Body small; surface with scattered or dense punctures. Head conical, shorter than pronotum (Fig. 7); fastigium roundedly protruding; interocular distance distinctly about 1/2 frontal ridge between antennae and about 0.6 times as wide as scape of antennae; frons oblique in profile; frontal ridge projecting between antennae; obsolete below transverse facial furrow, with shallow longitudinal sulcus below antennae; lateral facial keels straight; subocular furrow subobsolete. Antennae filiform, reaching base of postfemora. Eyes nearly rounded; longitudinal diameter about 1.2 times as horizontal diameter; about 1.9 times as subocular furrow. Pronotum with anterior margin broadly rounded; posterior margin roundedly concave; median carina indicated by a smooth line, interrupted by last sulcus only; lateral carinae absent; prozona 4.6 times longer than metazona (Fig. 7). Prosternum as a whole bulging; prosternal spine small; conical; apex subacute. Mesosternal lobes 1.1 times longer than wide; minimum width of

mesosternal interspace about 1.1 times larger than length; metasternal lobes contiguous (Fig 8). Apterous. Postfemora with upper carina smooth; lower genicular lobes with apex rounded. Posttibiae

with 8 external and 9 internal spines on dorsal side; external apical spine absent. Abdomen with median carina smooth. Tympana large.



Figs 7-13. *Genimen bannaum* sp. nov., male. 7. Head and pronotum, dorsal view. 8. Mesosternum and metasternum. 9-10. Terminalia, dorsal and lateral views. 11. Epiphallus, dorsal view. 12-13. Phallic complex, lateral and dorsal views. an = anchora; ap = apical penis valves; apd = apodeme; bp = basal penis valves; br = bridge; cv = valves of cingulum; lo = lophus; rm = ramio of cingulum; zy = zygoma. Scale bars = 1 mm.

Male 10<sup>th</sup> abdominal tergite broadly separate in middle; posterior margin with small triangular furcuae; roundedly concave between furcuae (Fig 9). Supraanal plate long triangular, 1.2 times longer than basal maximum width; basal third with shallow median longitudinal furrow; lateral areas a little concave; lateral margins somewhat constricted in middle; posterior margin roundly acute-angular (Fig 9). Cerci long conical; apex obtuse, slightly not reaching to apex of supraanal plate (Figs 9-10). Subgenital plate narrow, conical; apex obtuse (Fig

9). Epiphallus with bridge strongly narrow, faintly arched in dorsal view; bph nearly parallelogrammic; projecting in a more than 90° angle from bridge, with undulating thick margins and obtuse inner angle; anchorae large, compressed, apex subacute, pointing apicad; lateral plate with external margin weakly concave (Fig 11). Phallic complex with apical penis valves strongly prolonged, S-shaped, apex hooked; cingular valves fused in ventral side; sheath-shaped apodemes with apex forward slightly surpassing apex of basal penis valves; zygoma nearly straight (Figs

12-13).

Cobration (Figs 26-27). Body black with a narrow median yellow stripes on disc. Frons and frontal ridge yellow with symmetrical black spots. Genae yellow with an extra irregular black spots. ventral margin black. Fastigium yellow with margins black. Postocular bands black continued as lateral bands on disc of pronotum and abdomen. Antennae black, last segment dirty yellow. Eyes brown. Pronotum with lateral lobes black, ventral part yellow, ventral margin black. Postfemora yellow, in apical half with a complete black ring, outer side with a Y-shaped black marking, upper and lower sides with a longitudinal basal and a transverse median black spots, inner side with a black spot before middle, knee black. Posttibiae dirty blue, basal part black, next to a yellow ring, apex infusate. Hind tarsi dirty blue. Abdominal tergites black, ventral margin reddish yellow. Abdominal sternites darkish red.

Female Unknown

**Table 2 Comparison between *G. humanum* Rammé 1941 and *G. bannanum* sp. nov. in male**

<i>G. humanum</i> Rammé 1941	<i>G. bannanum</i> sp. nov.
Interocular distance broader, about as wide as scape of antennae	Interocular distance narrower, about 0.6 times as wide as scape of antennae
Pronotum with posterior margin faintly concave, apical and median transverse culci straight	Pronotum with posterior margin roundly concave, apical and median transverse culci remarkably curvate (Fig. 7)
10 <sup>th</sup> abdominal tergite without furcula	10 <sup>th</sup> abdominal tergite with small triangular furculae (Figs 9-10)
Supraanal plate triangular, apex obtuse	Supraanal plate long triangular, apex roundly acute angular (Fig. 9)

*Genimen zhengi* sp. nov. (Figs 14-23, 28-29)

Body small, surface with scattered or dense punctures. Head conical, nearly as long as pronotum (Fig. 14); fastigium roundly protruding, interocular distance extremely narrow, about 0.4 (♂) or 0.5 (♀) times as frontal ridge between antennae, and about 0.6 (♂) or 0.8 (♀) times as wide as scape of antennae; frons oblique in profile, frontal ridge projecting between antennae, obsolete below transverse facial furrow, with low longitudinal sulcus below antennae and subobsolete below median ocellus; lateral facial keels straight; subocular furrow subobsolete. Antennae filiform, reaching base of postfemur (♂) or surpassing beyond posterior margin of pronotum (♀). Eyes nearly rounded, longitudinal diameter about 1.2 times as horizontal diameter, and about 1.8-1.9 (♂) or 1.6 (♀) times subocular furrow. Pronotum with anterior margin weakly concave in middle, posterior margin shallowly concave, median carina indicated by a smooth line, interrupted by last sulcus only; lateral carinae absent; prozona 4.3 (♂) or 4.0 (♀) times as long as metazona (Fig. 14). Prosternum as a whole bulging, prosternal spine small, conical, apex subacute. Mesosternal lobes 1.2-1.4 (♂) or 1.2 (♀) times wider than long.

♂. Measurements (mm). Length of body 14.2, width of body at mes-episternum 3.5, length of antenna 9.5, length of pronotum 2.8, length of postfemur 8.5, width of postfemur 2.3.

Holotype ♂, Xishuangbanna, Yunnan Province (22° 16' N, 100° 54' E; alt. 850 m), 4 Aug. 2006, coll. LIU Hao-Yu and MAO Ben-Yong.

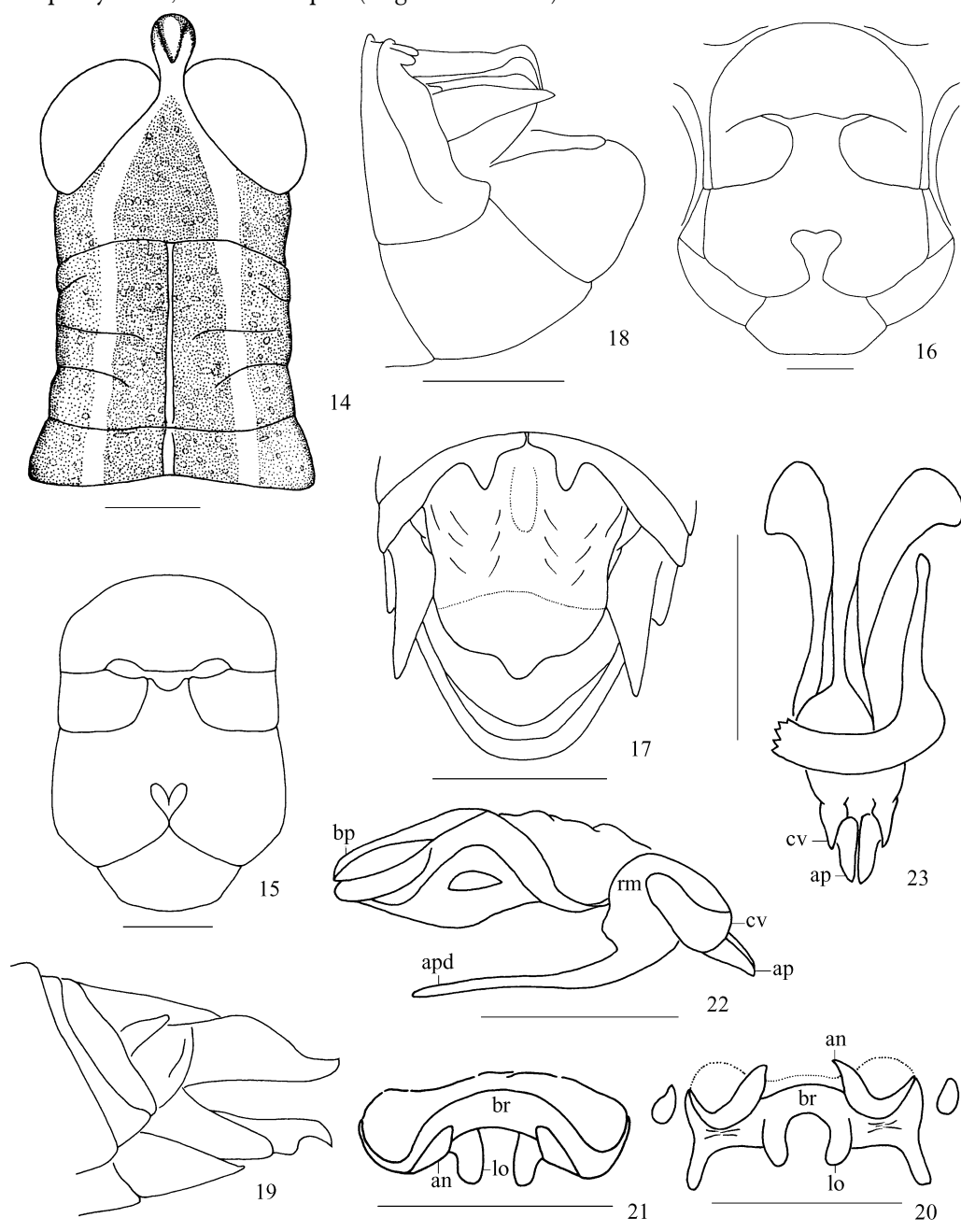
**Etymology.** Named after its occurrence in the hills of Xishuangbanna.

**Diagnosis.** The new species resembles *G. victorae* Rammé 1941 and *G. humanum* Rammé 1941, but can be distinguished from the former by the abdominal tergites in lateral parts and sternites being darkish red instead of darkish yellow (Figs 26-27). The differences between the new species and *G. humanum* are listed in Table 2. Moreover, the new species differs from other known species of the genus by having Y-shaped marking on the male postfemur (Fig. 26).

mesosternal interspace about 1.5-1.8 (♂) or 1.1 (♀) times longer than minimal width; metasternal lobes contiguous (♂) or separate (♀) (Figs 15-16). Apterous. Postfemora with upper carina smooth, lower knee lobes with apex rounded. Posttibiae with 8 external and 9 internal spines on dorsal side, external apical spine absent. Abdomen with median carina smooth. Tympana reduced, larger than stigma.

Male 10<sup>th</sup> abdominal tergite nearly contiguous in middle, posterior margin with triangular furculae, roundly concave between furculae (Fig. 17). Supraanal plate shield-shaped, basal third with low median longitudinal furrow, lateral areas a little concave, apical third thickened and pointing backward down, lateral margins a little constricted in middle, posterior margin roundly projecting in middle (Figs 17-18). Cerci long conical, apex subacute, surpassing apex of supraanal plate (Figs 17-18). Subgenital plate short conical, apex obtuse. Epiphallus with bridge arched in dorsal view, bphi projecting in a 90° angle from bridge, weakly incurved, anchorae large, compressed, apex subacute, pointing apically, lateral plate with external margin weakly concave (Figs 20-21). Phallic complex with apical penis valves narrow, apex acute, basal penis valves apically expanded.

cingular valves partly fused sheath-shaped (Figs 22- 23).

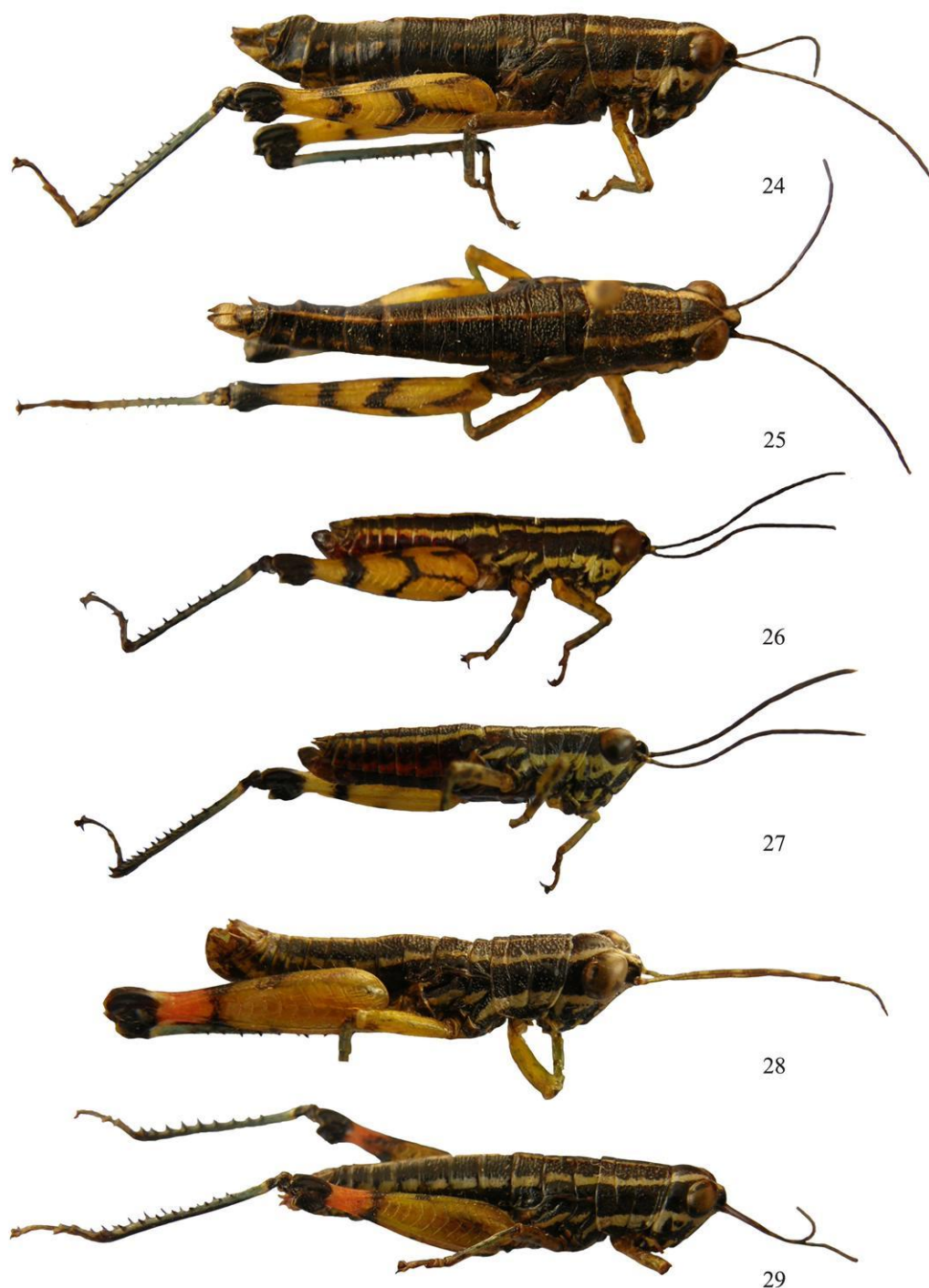


Figs 14-23 *G. n. zhengi* sp. nov. 14. Male head and pronotum, dorsal view. 15-16. Mesosternum and metasternum, male and female. 17-18. Male terminalia, dorsal and lateral views. 19. Female abdominal apex, lateral view. 20-21. Epiphallus, dorsal and anterior views. 22-23. Phallic complex, lateral and dorsal views (zigzag line broken). an = anterior; ap = apical penis valves; apd = apodeme; bp = basal penis valves; br = bridge; cv = valves of cingulum; lo = lophus; rm = rami of cingulum. Scale bars = 1 mm.

Female 10th abdominal tergite entire in middle. Supraanal plate triangular. Cerci conical. Subgenital plate with posterior margin triangular. Valves of ovipositor hook-like, margins smooth (Fig. 19).

Cobration (Figs 28-29). Body black with a narrow median yellowish white stripes on disc. Frons and frontal ridge yellow with symmetrical black spots. Genae yellow with two irregular black spots, ventral

margin black. Fastigium yellowish white with margins black. Postocular bands black continued as lateral bands on disc of pronotum and abdomen. Antennae brownish black, last segment yellow. Eyes brown. Pronotum black, lateral lobes black, ventral part yellowish white, ventral margin black. Postfemora yellow with a broad orange ring before knee and a narrow black ring before orange ring, upper side with



Figs 24-29 Body dorsal and lateral views 24-25. *Geninoiles vittatum* sp. nov. 26-27. *Genin bannanum* sp. nov. 28-29 *Genin zhengi* sp. nov. 24-25, 29. Female 26-28 Male

a black spot in middle; knee black. Posttibiae dirty blue with basal part black and next to a dirty yellow ring. Abdominal sternites and terminalia dirty yellow.

Measurements (mm). Length of body: ♂ 14.9-15.1, ♀ 22; width of body at mesoepisternum: ♂ 3.7-3.9, ♀ 4.9; length of antenna: ♂ 10.0-11.0, ♀ 9.4; length of pronotum: ♂ 2.6-2.7, ♀ 3.4; length of postfemur: ♂ 9.0-9.9, ♀ 10.8; width of

postfemur: ♂ 2.2-11.0, ♀ 2.7.

Holotype ♂, Jimao Town, Yijiang County, Yunnan Province (24°32'N, 97°49'E; alt 1200m), 30 July 2005, coll. MAO Ben-Yong. Paratypes 1 ♂, 1 ♀, same data as holotype.

**Etymology.** The species name is derived from the name of Prof. ZHENG Zhe-Min for his outstanding contributions in the field of insect taxonomy.

**Diagnosis** The new species is similar to *Geminoides yunnanensis* Zheng Huang et Liu, 1988. The differences between the two species are listed in Table 3. The new species differs from the other known species of the genus by its postfemora with a broad orange ring before knee.

Table 3 Comparison between <i>G. yunnanensis</i> Zheng Huang et Liu, 1988 and <i>G. zhengi</i> sp. nov.	
<i>G. yunnanensis</i> Zheng Huang et Liu, 1988	<i>G. zhengi</i> sp. nov.
Head shorter than pronotum	Head as long as pronotum (Fig. 14)
Posterior margin of male 10 <sup>th</sup> abdominal tergite angularly concave between furcuae	Posterior margin of male 10 <sup>th</sup> abdominal tergite roundly concave between furcuae (Fig. 17)
Male supraanal plate with apical third normal; lateral margins straight; posterior margin triangular projecting in middle	Male supraanal plate with apical third thickened; lateral margins a little constricted in middle; posterior margin roundly projecting in middle (Figs. 17-18)
Epiphallus with bridge straight in dorsal view; anchorae small, pointing inward; lateral plate with external margin straight	Epiphallus with bridge arched in dorsal view; anchorae larger, pointing apically; lateral plate with external margin weakly concave (Figs. 20-21)
Phallic complex with zygon a straight in dorsal view	Phallic complex with zygon a arched in dorsal view (Fig. 23)

**Biology** The food plants of the three species are unknown. The specimens of *Geminoides vittatum* and *Geminoides bannanum* were captured from graminaceous plants which generally survive under south subtropical monsoon evergreen broad-leaved forest and are common in the halfwet and halfshady zone between elevation 700-1 000 m in southern and southwestern Yunnan, such as *Arthraxon hispidus* (Thunb.) Makino, *Oplismenus compositus* (Linn.) Beauv. and *Echinochloa crusgalli* (Linn.) Beauv. The specimens of *Geminoides zhengi* were collected from the subtropical tussock grass and bushes.

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中国蝗虫一新纪录属和三新种 (直翅目, 斑腿蝗科)

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**摘要** 记述了中国斑腿蝗科 Catantopidae 1 新纪录属拟庚蝗属 *Geminoides* Henry, 1934, 1 新种条纹拟庚蝗 *Geminoides vittatum* sp. nov.; 庚蝗属 *Geminoides* Bolivar, 1918 2 新种版纳庚

蝗 *Geminoides bannanum* sp. nov. 和郑氏庚蝗 *Geminoides zhengi* sp. nov.。编写了拟庚蝗属已知种检索表和庚蝗属中国种检索表。模式标本保存于大理学院生命科学与化学学院。

**关键词** 直翅目, 斑腿蝗科, 拟庚蝗属, 庚蝗属, 新纪录属, 新种, 中国。

中图分类号 Q969.265.1

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